

Mr. Beuthner, however, kindly came to the rescue by offering the use of his cyclostyle. The offer was, of course, accepted with thanks.

By request, President Smith followed with his paper on "The Motion of Storms," read at the fifth monthly meeting, March 6, 1885, and printed in the then organ of the Association, the *Advocate*, of Huntington, Que.

Diagrams of the rapid veering of the wind having been shown and commented on ;

"Meteorites, their effects and influence," by Mr. H. Beaumont Small, was next read as follows :—"It is estimated that on any clear evening a watchful observer may see on an average two falling stars, or meteors as they are more generally styled, every five minutes, and at certain periods of the year in such abundance as to obtain the name of meteoric showers. These apparently emanate from some point of space known as a *radiant*, represented by a certain constellation, whilst single meteors appear to come from no particular point, but move in all directions and from every part of the sky ; these are called 'sporadic.' In their normal condition these wandering bodies are known as meteoroids, regular circum-solar bodies, obeying the laws of motion and gravitation equally with the planets. Entering our atmosphere, they become self luminous from the heat engendered by friction with the atmospheric medium, and the arrested motion which produces a sudden compression of the air. In traversing a space of 50 miles the meteoroid, or meteor as it has now become, is heated, melted, evaporated and extinguished in a period of a few seconds. The height from us at which they become heated to visibility is some times 200 miles, but the average has been put down at 75 miles, and extinction at 50 miles above the earth.

"The diameter of Jupiter is 80,000 miles, whilst that of Clio is only sixteen. Chladin, a philosopher at the end of the last century, thought that bodies might exist as much smaller in comparison as Clio to Jupiter, coming down in the same ratio to one twenty-fifth of an inch, mere cosmic dust. Myriads of these may revolve in space without our having any knowledge of their existence ; but, through some convulsion, or by some comet agency coming within the attractive power of a planet, fall towards it, and when entering its atmosphere go through the conditions of luminosity, fusion, &c. To this cosmic dust is now attributed the appearance known as the zodiacal light, for the sun, when below our horizon, reflects on the cosmical atoms of floating star dust and meteoroids, thus causing that soft glow in the western evening sky, just as a ray of light finding its way into a darkened room through a

small orifice, reveals as motes floating in a sunbeam the particles of dust floating in the air of the room, but only visible when the ray of light falls athwart them.

"Professor Newton, of Yale, considers meteoroids as fragments of, or attendants on comets, the vast mass moving in a long, thin stream around the Sun, and the Earth at stated times in its orbit plunges through these, taking with its atmosphere each time millions of them. Each comet, in its orbit, bears with it these attendants, thus accounting for the different set periods of meteoric displays. Sporadic meteors of nightly occurrence are but outlying stragglers of a number of meteoroid streams, to find which, with their attendant comets, is the leading problem of meteor science to-day. Schiaparelli regards meteoroids as original inmates or portions of one of what he calls "star-drifts," attendant bodies which accompany in its journey through space the general drift or star-family, of which the Sun forms part. On this assumption, they are bodies from some more distant space than the star family of the Sun, wanderers from more distant star-drifts.

"The conflagration of a star through contact with a meteoroid is not unknown. Hipparchus records one seen blazing in full day, 2,000 years ago. Similar events are recorded in 945, 1264, 1572, 1596 and 1604. In 1673, another made its appearance, remaining visible for two years ; in 1848, a similar event was noticed, and only a few years ago, another appeared, which Procter ably wrote on in *Belgravia*. In 1869, two meteoric masses were recorded as having fallen into our Sun, affecting the whole frame of the Earth and our meteorology. Vivid auroras were seen, where formerly they were unknown ; electro magnetic disturbance was manifested all over the earth. The telegraphs in many places refused to work, and thorough electric confusion reigned for a time. The question then arises, may not meteoric matter influence the conditions of life on the earth both in the animal and vegetable kingdom, and may it not also affect the atmospheric conditions by impregnation with various forms of cosmic dust ? The very air we breathe must at all times contain, in however minute a proportion, cosmic dust brought from interplanetary spaces, where different systems are differently constituted. The London *Lancet*, some years ago, remarked, it is not certain that deleterious results do not occasionally flow from an excess of some of the elements contained in meteors.

"Professor Roscoe goes so far as to conjecture that the soda which all accustomed to work with the spectroscope find present everywhere, may, by its anti-septic properties, exert a considerable influence in maintaining the public health,

whilst a deficiency might result in the propagation of an epidemic.

"Atmospheric electricity is also now partially attributed to meteoric influence. Professor Govi, in 1878, argued that a certain amount of heat is introduced into our atmosphere by meteors entering it, and Professor Everett attributes the sudden variations of the needle of the electrometer from no apparent assignable cause to the same influence. May not sudden meteoric influence in like manner affect the weather and the seasons ? The subject merits investigation.

The paper was followed by a short discussion.

Bishop Ussher here suggested the opening of a "telescope fund." The Association, with Mr. Pigeon's aid, might, he believed, easily put itself in possession of a good-sized instrument.

The President said a fund for the purpose existed, but had not been pushed. Subscriptions had last session been guaranteed to the amount of \$62.00.

Bishop Ussher moved, seconded by Mr. Wray : "That it is desirable that this Association procure as soon as possible the lenses for an astronomical telescope, and that a committee for this purpose be named, composed of the President, Messrs. Pigeon, Beuthner, Creak, and the mover and seconder, who shall obtain quotations and other information, and report at next meeting." Carried unanimously.

The following additional donations were guaranteed : Bishop Ussher, \$5.00 ; Mr. Vipond, \$10.00 ; Mr. Wray, \$5.00 ; and Mr. Austin, \$5.00 ; making the sum promised, \$87.00. It was also decided that the sub-committee be authorized to send circulars to members requesting subscriptions.

Bishop Ussher remarked that he could not allow the meeting to adjourn ere it passed a vote of thanks to the President for his earnest work, in the midst of such a busy life as his, as well as for his indefatigable efforts to advance the aims of the Association and the spread of knowledge.

The President said, smiling, that he supposed it was in order for him to put that motion. (Applause.)

Bishop Ussher asked to be considered Chairman a moment, that he might put the vote. He did so, and every hand was raised in the affirmative.

The President returned thanks in a brief speech, saying, that he did not consider that he had done much for the Association. He certainly felt that if he had more time he would like to do a great deal more. (Applause.)

The meeting adjourned at 10.20, until October, subject to the call of the President in the meantime.